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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/377,667	08/19/1999	HIROMU MUKAI	15162/01020	8179

24367 7590 09/29/2003

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EXAMINER

GENCO, BRIAN C

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 09/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/377,667

Applicant(s)

MUKAI, HIROMU

Examiner

Brian C Genco

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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Applicant's amendment filed July 23, 2003 has been fully considered by the Examiner but has not been deemed persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that Hokari's image sensors are square, not rectangular.

In response, Examiner notes Merriam-Webster's Collegiate Dictionary where rectangle is defined as "a parallelogram all of whose angles are right angles; esp: one with adjacent sides of unequal length" and rectangle as "a rectangle with all four sides equal". Examiner notes that the term rectangular is a broad term wherein the term square is equivalent. As such, Hokari's showing of square light receiving portions meets the limitation of rectangular light receiving portions.

Applicant argues that in the previous office action the Examiner "states that Funabashi discloses an image pickup device (page 7, line 1)."

In response, Examiner directs Applicant to Examiner's previous office action wherein it was specifically said that Funabashi does not disclose nor preclude an image sensor, namely one with microlenses.

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Applicant argues that the combination of having a diaphragm with a horizontally flat shape and a matrix shaped image sensor does not suggest the claimed limitations.

In response, Examiner notes Hokari's image sensor wherein as is conventional with image sensors, it is in matrix shape. Further, Examiner notes that Hokari discloses rectangular light receiving portions wherein the top and bottom of the light receiving portions are horizontally flat. Given that the rectangular light receiving portions are arranged in a matrix shape as shown in Fig. 1 of Hokari's disclosure and given the shape of the diaphragm disclosed by Funabashi is horizontally flat then in combining the teachings of the two references one of ordinary skill in the art would recognize that the horizontal direction of the diaphragm would coincide with a shape of the light receiving portions, namely the shape of the top and bottom of the light receiving portions.

Applicant argues that there is nothing in the cited references that indicate to one skilled in the art that any particular result would follow from the combination of the references (end of second paragraph on page 7).

In response, Examiner notes Applicant's admission that the Funabashi reference "is clearly for use with a camera (page 7, line 3)." As such the implicit motivation in Funabashi to use the aperture stop/shutter mechanism, including the diaphragm element 1, in a camera thus provides the motivation to use it in association with Hokari's image sensor in order to provide for a complete camera system as noted in the motivational statement of the previous office action.

The above responses to arguments were made in reference to claims 1-4 rejected by Funabashi in view of Hokari, wherein the same arguments are applied to following claims as well.

Applicant argues that Koide's stop member 4 bears no relationship to the width of photosensitive drum 7.

In response, Examiner notes that the limitation that the diaphragm corresponds to the width of the image sensor. Further Examiner notes, as asserted in the previous office action, that the horizontal shape of stop member 4 coincides with the horizontal shape of photosensitive drum. Further, upon combining with the teachings of Sugiyama to replace the photosensitive drum with an image sensor the horizontal shape of stop member 4 coincides with the horizontal shape of the light receiving portions.

Applicant argues that one skilled in the art would not be motivated to combine the image sensor of Sugiyama with the scanning mechanism of Koide because the resulting mechanism would scan a digital image as provided to light source 1 of Koide only to convert it back to a digital image using the image sensor of Sugiyama, thus accomplishing nothing.

In response, Examiner notes that as suggested by Sugiyama the image sensor could be a CCD wherein as one skilled in the art would recognize a CCD would produce an analog output which would have to subsequently be passed through an A/D converter to generate a digital signal again. Further, Examiner notes that something would be accomplished even if the image sensor directly generated a digital signal, namely that the digital signal produced by the single

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light source would be put into matrix form so as to make printing easier, as is the purpose of the photosensitive drum.

The above responses to arguments with reference to claims 1 and 2 using the combination of the Koide and Sugiyama references can also be made with reference to the arguments made for the rejections of claims 8 and 9.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over (JP 11-52451 to Funabashi) in view of (USPN 5,654,565 to Hokari).

In regards to claim 1 Funabashi discloses an image pickup device comprising:

an image input optical system for forming an image on a sensor, said image input optical system including a diaphragm (e.g., Fig. 1 wherein the claimed diaphragm is the opening formed in element 1); and

wherein the diaphragm has a shape in a horizontal direction that coincides with a shape of said light receiving portions of said sensor (e.g., conventionally light receiving portions are formed in a matrix shape wherein the horizontal direction of the diaphragm coincides with a matrix shape).

Funabashi does not disclose nor preclude an image sensor with microlenses being the sensor that the optical system is directed to. It is extremely well known and established in the art to use digital image sensors such as a CCD image sensor in order to capture an image directed to the image sensor by an optical system. Note that the pixels disclosed by Hokari are rectangular. It is further extremely well known and established in the art to use microlenses integrated on a CCD in order to focus more light onto a pixel. Both of these teachings are taught by Hokari (e.g., Figs. 1-9). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have had the optical system disclosed by Funabashi directed toward a CCD image sensor as it is a widely known, used, and manufactured image sensor and therefore it would be easy to acquire for the manufacture of complete camera systems. Furthermore, it would have been obvious to have had microlenses integrally attached to the CCD image sensor in order to focus more light onto a pixel.

In regards to claim 2 see Figs. 1-3 of Funabashi's disclosure.

In regards to claim 3 note that a vertical CCD for transferring charge out of a CCD image sensor is an implied feature of a CCD in order to facilitate the read out of charges (see Fig. 1 of Hokari's disclosure).

In regards to claim 4 see examiners notes on the rejection of claim 1. In this rejection examiner is redefining the diaphragm to be elements 2 and 3 of Fig. 1 and further defining the claimed light restricting plate as element 1 of Fig. 1. Further note that the diaphragm and light restricting plate as defined above are provided separately from each other as shown in Fig. 1.

In regards to claim 5 Examiner notes that the light restricting plate is disposed on one side in the horizontal direction as well as the other as shown in Fig. 1.

In regards to claim 6 see Fig. 1.

In regards to claim 7 see examiners notes on the rejection of claims 3 and 4.

In regards to claims 8-14 see examiners notes on the rejection of claims 1-7.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claims 1, 2, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over (USPN 5,510,826 to Koide) in view of (USPN 5,365,307 to Sugiyama) in further view of (USPN 5,654,565 to Hokari).

In regards to claim 1 Koide discloses an image pickup device comprising:  
a photosensitive drum;



an image input optical system for forming an image on a sensor, said image input optical system including a diaphragm (e.g., Fig. 2); and

wherein the diaphragm has a shape in a horizontal direction that coincides with a shape of said light receiving portions of said sensor (e.g., element 4 of Fig. 2; Fig. 3).

Koide does not disclose nor preclude an image sensor with rectangular pixels and microlenses integrally formed. Sugiyama discloses that it is known in the art to use a linear image sensor instead of a photosensitive drum in order to photoelectrically read the image information and obtain a copy based on the output of the image sensor (e.g., column 2, lines 58-63). Therefore it would have been obvious to replace Koide's photosensitive drum with a linear image sensor as disclosed by Sugiyama in order to photoelectrically read the image information and obtain a copy based on the output of the image sensor. Hokari discloses a two-dimensional image sensor with rectangular pixels and microlenses (e.g., Figs. 1-9). It is extremely well known and established in the art to use microlenses integrated on a CCD in order to focus more light onto a pixel. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have had rectangular pixels with microlenses integrally attached as taught by Hokari in order to focus more light onto a pixel.

In regards to claim 2 see element 4 of Fig. 2.

In regards to claims 8 and 9 see examiners notes on the rejection of claims 1 and 2.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian C. Genco who can be reached by phone at 703-305-7881 or by fax at 703-746-8325. The examiner can normally be reached on Monday thru Thursday 7:30am to 4:30 pm and every other Friday 7:30am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-9644. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center 2600 customer service office whose telephone number is 703-306-0377.

Brian C Genco  
Examiner  
Art Unit 2615

September 24, 2003



ANDREW CHRISTENSEN  
SUPERVISORY PATENT EXAMINER  
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